Nomenclature of the New Zealand Wandering Albatrosses *Diomedea exulans*

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The Wandering Albatrosses breeding in the New Zealand sub-region have customarily been classified as of the typical race *Diomedea exulans exulans*. This is evidently because Salvin (1896) believed that the type drawing, plate 88 in George Edward's *Natural History of Birds* (1747), best fitted a New Zealand bird. However, the type locality designated by Linnaeus (1758) is between the tropics and the Cape of Good Hope, as pointed out by Bourne (1989). The identity of Linnaeus' bird seems to be indeterminable (Robertson 1986) but it is unlikely that it came from New Zealand. We have no evidence that New Zealand birds reach the Cape; rather the contrary for, as recoveries of banded birds and other evidence are showing, New Zealand populations seem restricted to the Pacific Ocean and probably do not circumnavigate the world. We do not agree with the proposal of Bourne (1989) that the small "intermediate" population of the Auckland Islands should be lumped with the large birds from other subantarctic islands (usually classified as *D. e. chionoptera*) under the name *D. e. exulans*. Another of his "intermediate" populations (from Antipodes and Campbell Islands) he leaves unnamed. Therefore we propose to erect two new subspecies, one for the small dark birds that breed at Antipodes and Campbell Islands and the other for the small, pale and early-laying population of the Auckland Islands. Other existing names are unsuitable. *Diomedea exulans rothschildi* Mathews, 1912 is too large a bird to have come from either population (bill 166 mm, wing 650 (worn); tail 190; tarsus 121; Gibson Plumage Score 14). *Diomedea exulans rohui* Mathews, 1915 is bigger and paler (bill 171 mm; wing in moult; tail 206; tarsus 122; Gibson Plumage Score 20.5). Both these specimens fit the characters of the high-latitude race *D. e. chionoptera* Salvin.

Gibson Plumage Scores refer to a scale for coding the plumages of Wandering Albatrosses devised by Gibson (1967) in which the darkness of head, back, inner upperwing and tail are scored and totalled to give a range from 4 to 21. The lighter the plumage the higher the score—see also Warham (1990, p. 24).

In the measurements given here the wing was flattened on a stopped rule.

Diomedea exulans antipodensis subsp. nov.

Holotype. Adult female, National Museum of New Zealand (NMNZ) 23412. Central plateau, Antipodes Island, collected by C. J. R. Robertson 3 March 1985.

Allotype. Adult male, NMNZ 23411, paired with NMNZ 23412. Central Plateau, Antipodes Island, collected by C. J. R. Robertson 3 March 1985.

Paratype. British Museum Natural History (BMNH) 1905.12.30.404, a male taken at the nest but not on egg, at Antipodes Island on 15 January 1903, given to Edward Wilson by Captain Hutton at Christchurch. Other paratypes are: male, NMNZ 21374, collected Antipodes I. 24 November 1978 by C. J. R. Robertson; female, BMNH 1938.4.11.1, collected by N. T. Corbett at Campbell I. on 28 January 1938; and female, NMNZ 21373, collected at Antipodes I. on 24 November 1978 by C. J. R. Robertson.

Specimens examined. 9 skins from Antipodes I. and 5 from Campbell I., together with 128 live birds measured on the breeding grounds.

Distribution. Breeds only at Antipodes and Campbell Islands. Range at sea: to southern and eastern Australian seas and the south Pacific Ocean to the west coast of South America.

Description of holotype (Fig. 1, A & B; Fig. 2, A & D)

(a) Upperparts. Forehead and cheeks white. Crown with uniform dark brown feathers fading into slightly paler brown nape and jugulum. Nape appears mottled due to exposed white bases of the feathers, e.g. as shown in plate 2 of Warham & Bell (1979) and p. 59 in Robertson (1985). Mantle, scapulars, back, rump and tail coverts blackish-brown, feathers slightly paler at edges. Tail sooty black. Wing blackish-brown, exposed primaries darker, coverts slightly paler and concolorous with back.

(b) Underparts. Throat white, rather sharply separated from pale chocolate-brown sides of neck and upper breast but with a band *c*. 15 mm wide of whitish feathers lightly speckled with brown between the two. Upper breast covered with chocolate-brown feathers whose pale edges create a slight scaled effect, the whole forming a bold brown apron *c*. 185 mm deep in the midline. On the lower breast this apron merges into the white belly via an intermediate zone *c*. 80 mm deep of white feathers lightly vermiculated with brownish-grey zigzag bars and grey speckles, the bars 5-7 mm apart. Belly white. More heavily vermiculated feathers extend down the flanks, onto the thighs and towards the upper tail coverts. Lower belly white, lightly speckled with grey-brown and faint vermiculations, heavier towards the vent. Vent covered by chocolate-brown feathers. Under tail coverts pale at bases but exposed parts grey-brown, unbarred and dark at their tips. Tail feathers blackish-brown. Wing white except for exposed sooty black of primaries and edging, *c*. 10 mm wide, of sooty black coverts from the carpal flexure to the base of the outermost primary.

(c) Gibson Plumage Score. 4.5 (head 1, back 1.5, wing 1, tail 1).

(d) Soft parts. Dark suffusion throughout the mandibular unguis.

(e) Measurements. Bill length 149 mm; wing 640 (worn); tail 200; tarsus 112; middle toe & claw 169; head width 60; weight 5.7 kg.

Description of allotype (Fig. 1, A & B; Fig. 2, A & B)

(a) Upper parts. Forehead and cheeks white. Crown white but with blackish-brown feathers forming a cap separated from the nape by white, lightly vermiculated feathers. Mantle and back white, with bold zigzag barrings of blackish-brown. Lower back, rump and tail coverts paler than back but extensively vermiculated throughout. Tail sooty black, some rectrices lightly tipped with whitish. Wing blackish-brown with white bases to coverts and white-freckled coverts exposed at humeral flexure.

Scapulars and lesser coverts white heavily vermiculated with brown and merging with the similar patterned mantle.

(b) Under parts. Throat white, extending further down breast than in holotype and not sharply marked off from the heavily barred feathers of the upper breast because of an intervening zone *c.* 60 mm deep of white feathers with grey brown vermiculations about 10 mm apart. Breast white, the feathers crossed by grey-brown vermiculations and dusted with dark brown spots creating a pale, grey-brown apron. The zigzag barrings on the breast spreading onto the white feathers on the sides of the nape, and to the flanks and thighs, the latter with bars *c.* 2 mm wide and *c.* 10 mm apart. Feathers around vent white but lightly vermiculated, tail coverts white and strongly vermiculated like the thighs. Tail blackish-brown, lateral rectrices mainly white except for blackish tips or black along their narrow vanes. Wing white except for sooty black primaries and a few dark feathers along the leading edge from the carpal joint outwards.

(c) Gibson Plumage Score. 10 (head 4, back 3.5, wing 1.5, tail 1).

(d) Soft parts. Posterior half of mandibular unguis suffused with blackish.

(e) Measurements. Bill length 152 mm; wing 652; tail 204; tarsus 113; middle toe & claw 170; head width 66; weight 8.3 kg.

Diagnosis. Adult females are distinguished from all other populations of *exulans* by their dark brown plumage except for the face, lower belly and underwing, a pattern that resembles the immature plumage of other subspecies. Adult males are distinguished from *D. e. chionoptera* Salvin, 1896 by their smaller size and shorter bill, but not readily separated from many adult *D. e. gibsoni* n. subsp. on size or plumage pattern except that the cap of *antipodensis* is usually more pronounced and the upperwing has less white showing at the humeral flexure. Some adult Tristan da Cunha and Gough Island birds, *D. e. dabbenena* Mathews, 1929, resemble male *antipodensis* but are shorter-winged. From the recently described small, dark albatross *D. amsterdamensis* Roux *et al.*, 1983, *D. e. antipodensis* appears to differ in lacking a prominent black cutting edge to the upper tomia of the bill and in having a smaller black mark along the leading edge of the base of the underwing. *Diomedea amsterdamensis* also lays in the first half of March, much later than birds of the New Zealand region, which have no known contact with members of that form. New Zealand Wandering Albatrosses do not appear to reach the Indian Ocean sector.

Etymology. antipodensis = antipodean.

Diomedea exulans gibsoni subsp. nov.

Holotype. Adult male, NMNZ 23375. Astrolabe Point, Adams Island, Auckland Group, collected by C. J. R. Robertson 15 February 1985.

Allotype. Adult female, NMNZ 18110. Adams Island, collected by B. D. Bell 5 January 1973.

Paratypes. NMNZ 23374 male, collected Adams I. 15 February 1985 by C. J. R. Robertson; and NMNZ 18109 male, collected Adams I. 5 January 1973 by B. D. Bell. We know of no skins of females suitable as paratypes.

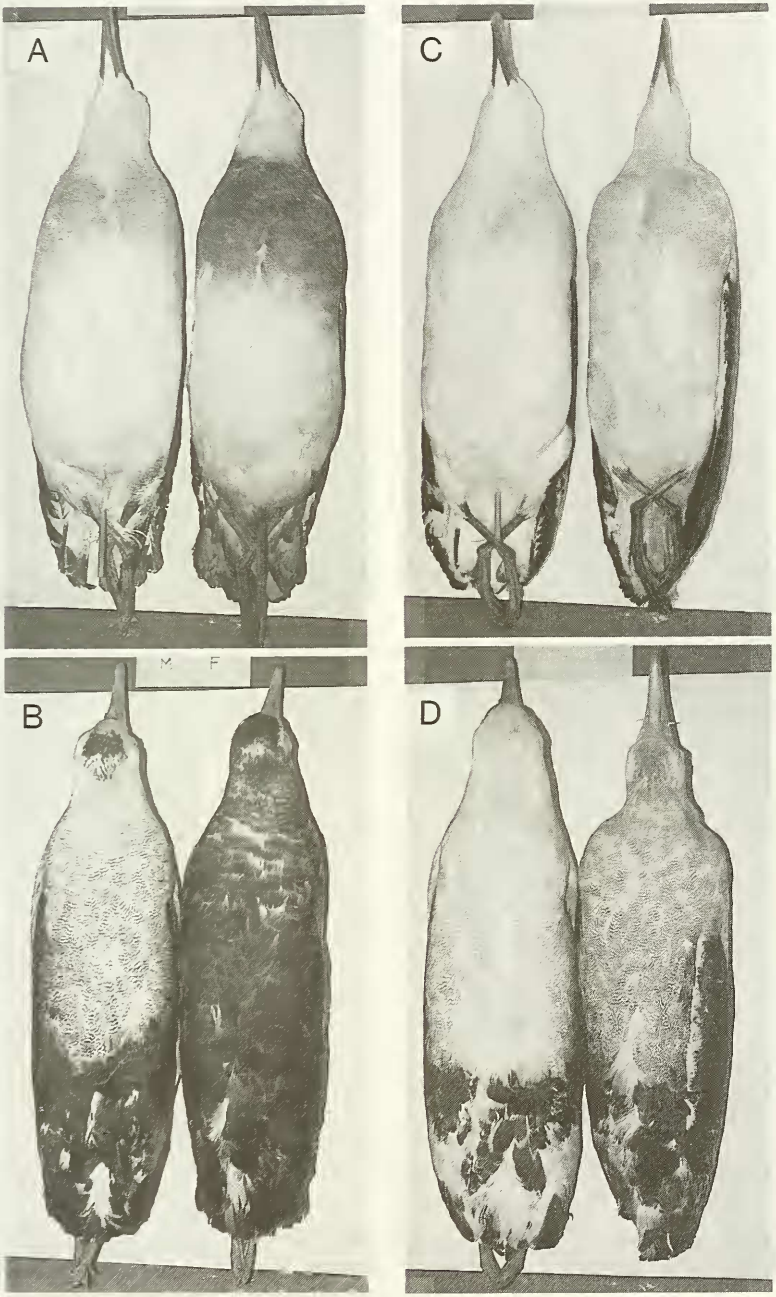

Figure 1.

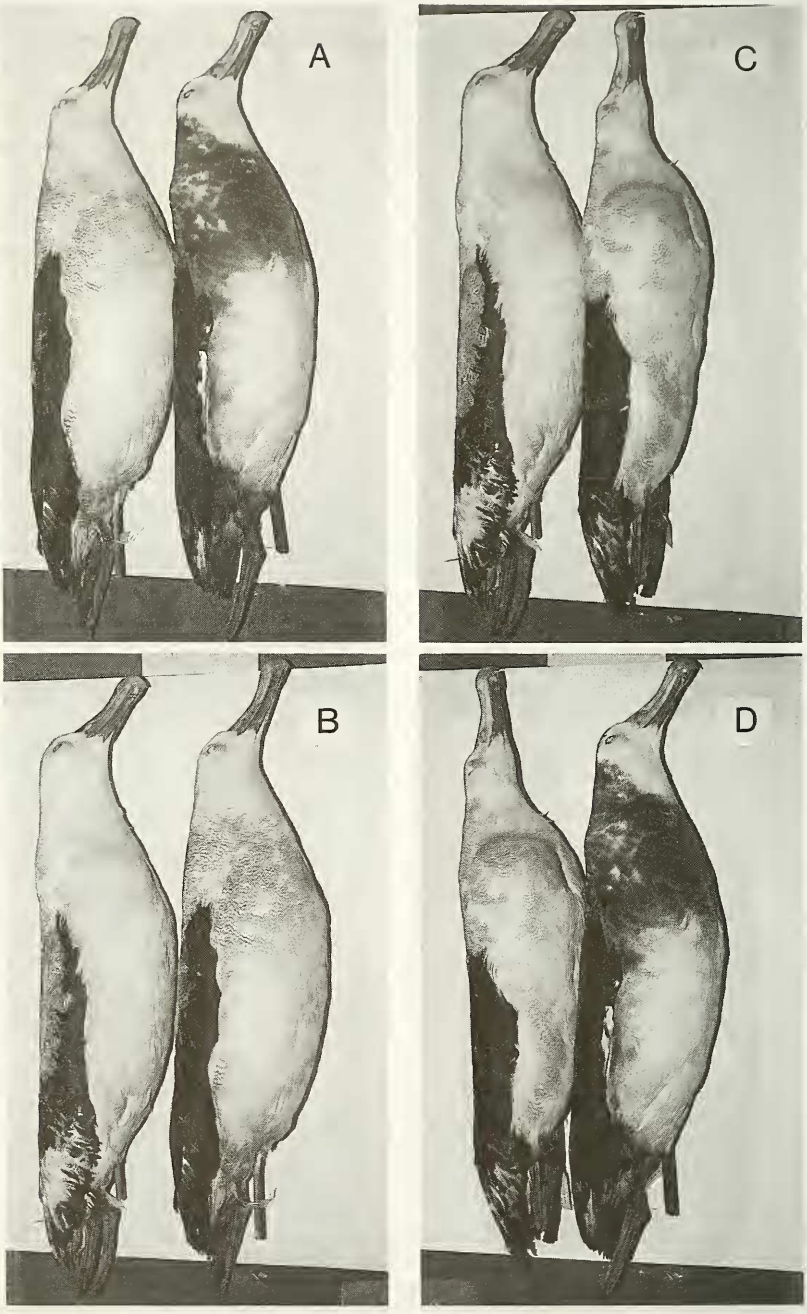

Figure 2.

Specimens examined. 5 skins from the Auckland Islands together with 70 live birds measured on the breeding grounds.

Distribution. Breeds only at the Auckland Islands, on Adams and Disappointment Islands and on the main island of that group. Ranges at sea to southern and eastern Australia and the western south Pacific Ocean.

Description of holotype (Fig. 1, C & D; Fig. 2, B & C)

(a) Upperparts. Forehead and cheeks white. Crown with a few grey-tipped feathers; otherwise this and the nape are white with a slight dusting of greyish. Mantle and back white, the feathers crossed by dark grey-brown vermiculations *c.* 8 mm apart; similarly-patterned feathers extend to the scapular region onto the inner wing and down the sides of the nape. Lower back, rump and tail coverts white very lightly barred with darker zigzag markings. Tail tipped with dark brown but inner vanes of rectrices edged with white which extends to the tips in the lateral feathers. Primaries and their coverts sooty black; many white, faintly vermiculated feathers exposed at the humeral flexure forming a bold white patch. Secondaries blackish-brown with much white on their inner vanes. Coverts and scapulars extensively fringed with whitish.

(b) Underparts. Throat, cheeks and sides of neck white, shading into the pale upper breast where the feathers are lightly vermiculated and dusted with grey to form a faint grey apron *c.* 175 mm deep in the midline. This apron itself shades into the white of the lower breast and belly and out to the flanks and thighs whose white feathers are faintly crossed with zigzag vermiculations, more pronounced on the thighs and widely separated, *c.* 9 mm apart. Feathers in vent area white, very slightly dusted with grey. Undertail coverts white. Rectrices white, the central ones tipped brown, the lateral ones tipped white but with their inner vanes carrying brown splotches or vermiculations, the outermost being the palest. Underwing white except for the black primaries.

(c) Gibson Plumage Score. 15 (head 5, back 4.5, wing 3.5, tail 2).

(d) Soft parts. Base of mandibular unguis and inter-ramicorn with trace of dark blackish-brown.

(e) Measurements. Bill length 152 mm; wing 651; tail 204; tarsus 114; middle toe & claw 162; head width 62; weight 6.6 kg.

Description of allotype (Fig. 1, C & D; Fig. 2, C & D)

(a) Upperparts. Forehead and supraorbital area white. Crown white, but brownish-grey tips to the feathers create a light grey cap which merges into the paler neck whose feathers are white dusted and streaked with brownish-grey. Nape, mantle and back white, heavily vermiculated with brownish-grey. Lower back and tail coverts are whiter as the barrings are less pronounced. Tail blackish-brown. Upperwing dark brown in the middle and outer segments due to the blackish-brown primaries, dark

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Figure 1. A & B: *Diomedea exulans antipodensis.* Male 23411 (left) & female 23412 (right).
C & D: *Diomedea exulans gibsoni.* Male 23375 (left) & female 18110 (right).

Figure 2. A: *Diomedea exulans antipodensis.* Male 23411 & female 23412.
B: Males: *D. e. gibsoni* 23375 (left) & *antipodensis* 23411 (right).
C: *D. e. gibsoni.* Male 23375 & female 18110.
D: Females: *D. e. gibsoni* 18110 (left) & *antipodensis* 23412 (right).

brown exposed vanes of the secondaries and dark brown coverts in these segments. At the humeral flexure some of the pale bases of the brown coverts are exposed creating a pale patch in this region. The inner (humeral) segment is paler, the coverts being white very strongly vermiculated with brownish bars so that the wing merges into the similarly patterned scapulars and mantle.

(b) Underparts. Throat and cheeks white. Upper breast feathers white marked with narrow grey zigzag bars and small greyish spots to form a grey apron *c.* 170 mm deep in the midline and not strongly marked off from the white throat and belly. Vermiculations are bolder on sides of the upper breast and on the flanks and extend to the feathers of the thighs, being *c.* 170 mm apart. Vent area white lightly dusted and barred with brownish-grey, exposed tail coverts white with strong vermiculations. Rectrices greyish-brown.

(c) Gibson Plumage Score. 11.5 (head 4.5, back 4, wing 2, tail 1).

(d) Soft parts. Mandibular unguis blotched with blackish marks.

(e) Measurements. Bill length 143.5 mm; wing 616; tail 194; tarsus 106.

Diagnosis. Differs from adult *D. e. chionoptera* in being smaller in all dimensions and from adult *D. e. dabbenena* in being longer-winged (Warham *et al.*, in prep.). Adults have much paler plumage than *antipodensis* of the same sex, so that adult female *gibsoni* may resemble adult male *antipodensis*, whereas male *gibsoni* are much paler than any male *antipodensis* which have darker caps and tails and show little if any white at the humeral flexure.

Etymology. Named for the late J. D. 'Doug' Gibson who, over many years, helped unravel the colour phases of the thousands of Wandering Albatrosses that he banded off New South Wales.

Remarks. The types have been selected as far as possible to be representative of their breeding populations and sexes. For example the Gibson Plumage Scores (means $\pm$ S.D.) show, for *antipodensis*: 23411 male 9.0, population mean (43 males) 8.7 ± 1.6 (5.5–11.5); 23412 female 4.5, population mean (45 females) 4.4 ± 0.5 (4–6); and for *gibsoni*: 23375 male 15, population mean (12 males) 14.2 ± 2.4 (10.5–19); 18110 female 11.5, population mean (9 females) 10.2 ± 1.5 (7.5–12).

A few birds at Disappointment Island breed in darker plumage than the other *gibsoni* there and may be indistinguishable from *antipodensis*. One extremely pale 'snowy' bird has been recorded at Adams Island (Bailey & Sorensen 1952, p. 143f): no such birds have been seen at Antipodes Island among the hundreds of Wandering Albatrosses examined there.

In their brown juvenal plumage birds of any of the small populations seem, on present knowledge, indistinguishable, but young *chionoptera* would be larger than young New Zealand birds.

Colours of the legs and particularly of the bill change with the season and activity, and there seems to be little correlation between bill colour in life and that after death. The only feature that consistently persists is dark marks or suffusions on the nails, as noted in the above descriptions.

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A re-analysis of *Butorides*

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Payne (1974) examined a massive series of specimens of the *Butorides striatus* complex that included 837 New World specimens, of which 72 were from Panama; these were assembled from the collections of the American Museum of Natural History (AMNH), Field Museum of Natural History (FMNH), the University of Michigan Museum of Zoology (UMMZ) and the National Museum of Natural History (USNM). From this study emerged the analysis by Payne (1974), in which he developed a hybrid index for neck colour, the single variable that appeared to separate *B. virescens* (Linnaeus, 1758) from *B. striatus* (Linnaeus, 1758). Because of the intermediate nature of specimens from Panama and the southern Lesser Antilles, Payne recommended that the two taxa be lumped into a single species, *B. striatus*, as reflected by his treatment in Peters (1979: 219–226) in which he considered the complex as a single species, *Ardeola striata*.

Payne (1974: 82) based his taxonomic conclusions on specimens that he ranked by comparison with a hybrid index established from a series